Please type a plus sign (+) inside this box → [+]

PTO/SB/05 (12/97)

UTILITY PATENT APPLICATION TRANSMITTAL

Only for new nonprovisional applications under 37 C.F.R. 1.53(b))

Attorney Docket No.	402/594
First Named Inventor or Application Identifier	Hidetoshi Kinoshita
Title	SOUND COLLECTING DEVICE MINIMIZING ELECTRICAL NOISE
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO: **Assistant Commissioner for Patents**
Box Applications
Washington, DC 20231

1. [X] Filing Fee as calculated below.
2. [X] Specification [Total Pages [**16**]]
   (preferred arrangement set forth below)
   - Descriptive title of the invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
3. [X] Drawing(s) *(35 USC 113)* [Total Pages [**4**]]
4. Oath or Declaration [Total Pages [**1**]]
   a. [X] Newly executed (original or copy)
   b. [ ] Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional with Box 17 completed)*
      [ ] DELETION OF INVENTOR(S)
      Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)
5. [ ] Incorporation By Reference *(useable if Box 4b is checked)* The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. [ ] Microfiche Computer Program *(Appendix)*
7. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. [ ] Computer Readable Copy
   b. [ ] Paper Copy (identical to computer copy)
   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. [X] Assignment Papers (cover sheet & document(s))
9. [ ] 37 CFR 3.73(b) Statement [ ] Power of Attorney
10. [ ] English Translation Document *(if applicable)*
11. [X] Information Disclosure Statement (IDS)/PTO-1449 [X] Copies of IDS Citations
12. [X] Preliminary Amendment
13. [X] Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*
14. [ ] Small Entity Statement(s) [ ] Statement filed in prior application, Status still proper and desired
15. [X] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. [ ] Other:

17. **If a CONTINUING APPLICATION,** *check appropriate box and supply the requisite information:*
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No. ____/_____

18. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label *(Insert Customer No. or Attach bar code label here)* or ☒ Correspondence address below

NAME	**Pollock, Vande Sande & Amernick,** R.L.L.P.				
ADDRESS	**Suite 800**				
	1990 M Street, N.W.				
CITY	**Washington**	STATE	**DC**	ZIP CODE	**20036-3425**
COUNTRY	**U.S.A**	TELEPHONE	**(202) 331-7111**	FAX	**(202) 293-6229**

Fee Calculation and Transmittal

	(Col 1) NO. FILED		(Col 2)	(Col 3) NO. EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	NON-SMALL ENTITY RATE	NON-SMALL ENTITY FEE
TOTAL	13	minus	20	= 0	x9=	$		x18=	$0
INDEP	2	minus	3	= 0	x39=	$		x78=	$0
___ First Presentation, Multiple Dependent Claims					+130=	$		+260=	$0
Base Filing Fee						$380			$760
Other Fee (specify purpose) Assignment recordation						$			$40
TOTAL FILING FEE* (accounting for possible small entity status)						$	OR	TOTAL	$800

☒ A check in the amount of $800.00 to cover the filing fee is enclosed

☐ No payment is enclosed at this time. Full payment will be made when the executed Declaration is submitted.

☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. 22-0185 as described below. A duplicate copy of this sheet is enclosed.

- ☐ Charge the amount of _____ as filing fee
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 CFR § 1.16 and 1.17
- ☐ Charge the Issue Fee set in 37 CFR § 1.18 at the mailing of the Notice of Allowance, pursuant to 37 CFR § 1.311(b)

Name *(Print/Type)*	Morris Liss	Registration No. *(Attorney/Agent)*	24,510
Signature	Morris Liss	Date	10/5/99

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
Hidetoshi Kinoshita	:	
Serial No. To be assigned	:	Art Unit: To be assigned
Filed: Herewith	:	Examiner: To be assigned
For: SOUND COLLECTING DEVICE MINIMIZING ELECTRICAL NOISE	:	Atty Docket: 402/594

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, please enter the following amendment:

IN THE SPECIFICATION

On page 5, line 13, after "7", please delete "6".

REMARKS

Claims 1-13 remain in the application. By the foregoing amendment, a minor typographical error has been corrected.

Respectfully submitted,

Morris Liss, Reg. No. 24,510
Pollock, Vande Sande & Amernick, R.L.L.P.
1990 M Street, N.W.
Washington, D. C. 20036-3425
Telephone: 202-331-7111

Date: 10/5/99

SOUND COLLECTING DEVICE MINIMIZING ELECTRICAL NOISE

BACKGROUND OF THE INVENTION

1 Technical Field of the Invention

The present invention relates generally to a sound collecting device designed to minimize electric noises caused by dust, frozen foreign substances lying on an electroacoustic transducer exposed to the air, or electromagnetic noises inputted directly to the transducer.

2 Background Art

Fig. 8 shows a conventional sound collecting device which consists of a horn 1 designed so as to increase in sectional area in a lengthwise direction for ease of collecting the sound wave, an electroacoustic transducer 2 (i.e., a microphone) installed in a base of the horn 1, and a preamplifier 3 connecting electrically with the transducer 2. An audio signal outputted from the transducer 2 is, as clearly shown in Fig. 9, amplified by the preamplifier 3 and outputted to an external device.

The transducer 2 is usually exposed to the air for catching sound waves and thus has the problems in that dust is gathered on a diaphragm of the transducer 2 with time or when the device is used in winter, it may cause the moisture in the air to be frozen solid on the diaphragm, which affects on an operation of the transducer 2, and in that since the transducer 2 needs to be exposed directly to the air, it is difficult to use a shield for protecting the transducer 2 from electromagnetic waves originating from high-voltage cables or

transmission antennas, so that the electromagnetic noises are inputted directly to the transducer 2.

SUMMARY OF THE INVENTION

It is therefore a principal object of the present invention to avoid the disadvantages of the prior art.

It is another object of the present invention to provide a sound collecting device designed to minimize adverse effects on an output caused by dust, frozen foreign substances lying on an electroacoustic transducer exposed to the air, or electromagnetic noises inputted directly to the transducer.

According to one aspect of the invention, there is provided a sound collecting device which comprises: (a) a transducer responsive to input of a sound wave to vibrate, producing a corresponding acoustic signal; (b) an amplifier amplifying the acoustic signal from the transducer; and (c) a vibrating circuit connected to the transducer in parallel to the amplifier to vibrate the transducer.

In the preferred mode of the invention, a switch is provided which selectively establishes and blocks communications between the transducer and the amplifier and between the transducer and the vibrating circuit.

A controller is provided which controls an operation of the vibrating circuit. The controller may also control a switching operation of the switch.

A temperature sensor is provided which measures an ambient temperature. The controller controls the vibrating circuit to vibrate

the transducer at a shorter time interval when the ambient temperature measured by the temperature sensor is lower than a given value and at a longer time interval when the ambient temperature is higher than a given value.

According to the second aspect of the invention, there is provided a sound collecting device which comprises: (a) a transducer responsive to input of a sound wave to vibrate, producing a corresponding acoustic signal; (b) an amplifier amplifying the acoustic signal from the transducer; (c) an electromagnetic sensor responsive to input of an electromagnetic wave to produce a corresponding electromagnetic signal; (d) and an output circuit subtracting the electromagnetic signal produced by the electromagnetic sensor from an output from the amplifier to produce an acoustic signal from which an electromagnetic wave-caused noise is removed.

In the preferred mode of the invention, a housing, a sound collecting unit disposed within the housing, and a sensor amplifier amplifying the electromagnetic signal outputted from the electromagnetic sensor are provided. The transducer is installed in the sound collecting unit. The electromagnetic sensor is installed in the housing adjacent the sound collecting unit.

An opening formed in the housing for allowing the electromagnetic wave to enter the electromagnetic sensor from the same direction as that in which the sound wave enters the transducer.

A first and a second peak hold circuit are provided. The first

peak hold circuit holds a peak of the output from the amplifier to provide a corresponding signal to the output circuit. The second peak hold circuit holds a peak of an output from the sensor amplifier to provide a corresponding signal to the output circuit.

A transducer vibrating circuit is connected to the transducer in parallel to the amplifier to vibrate the transducer. A sensor vibrating circuit is connected to the electromagnetic sensor in parallel to the sensor amplifier to vibrate the electromagnetic sensor.

A first and a second switch are provided. The first switch selectively establishes and blocks communications between the transducer and the amplifier and between the transducer and the transducer vibrating circuit. The second switch selectively establishes and blocks communications between the electromagnetic sensor and the sensor amplifier and between the electromagnetic sensor and the sensor vibrating circuit.

A controller is provided which controls an operation of the transducer vibrating circuit. The controller may also control switching operations of the first and second switches.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood more fully from the detailed description given hereinbelow and from the accompanying drawings of the preferred embodiments of the invention, which, however, should not be taken to limit the invention to the specific embodiments but are for the purpose of explanation and understanding only.

In the drawings:

Fig. 1 is a block diagram which shows a sound collecting device according to the first embodiment of the invention;

Fig. 2 is a block diagram which shows a sound collecting device according to the second embodiment of the invention;

Fig. 3 is a block diagram which shows a sound collecting device according to the third embodiment of the invention;

Fig. 4(a) is a signal wave outputted from a transducer;

Fig. 4(b) is an ON-signal inputted to a drive circuit;

Fig. 5 is a sectional view which shows a sound collecting device according to the fourth embodiment of the invention;

Fig. 6 is a block diagram which shows a circuit structure of the sound collecting device shown in Fig. 5;

Fig. 7 6 is a block diagram which shows a sound collecting device according to the fifth embodiment of the invention;

Fig. 8 is a sectional view which shows a conventional sound collecting device; and

Fig. 9 is a block diagram which shows a circuit structure of the sound collecting device in Fig. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, wherein like numbers refer to like parts in several views, particularly to Fig. 1, there is shown a sound collecting device according to the first embodiment of the present invention.

The sound collecting device generally includes an electroacoustic transducer 2 (e.g., a microphone), a preamplifier 3, a drive circuit 4, and a manual switch 30 and has substantially the

same mechanical structure as that in the conventional one shown in Fig. 8. Specifically, the transducer 2 is installed in a base of a horn such as the one shown in Fig. 8 designed so as to increase in sectional area in a lengthwise direction for ease of collecting sound waves. The transducer 2 is responsive to the sound waves or sound-producing vibrations applied to, for example, a diaphragm to vibrate to produce corresponding electrical signals and outputs them to the preamplifier 3. The preamplifier 3 amplifies the input signals and outputs them to an external device (not shown). The drive circuit 4 is connected in parallel to the preamplifier 3 which is responsive to an ON-signal outputted from the manual switch 30 turned on by an operator of the device to vibrate the transducer 2 at a given frequency for shaking foreign substances such as dust or drops of water from the diaphragm of the transducer 2. The vibration of the transducer 2 is stopped by manual input of an OFF-signal from the switch 30.

Fig. 2 shows the second embodiment of the invention which is different from the first embodiment in Fig. 1 only in that a switch 5 is provided which blocks electrical communication between the transducer 2 and the preamplifier 3 in response to input of the ON-signal from the manual switch 30 . Other arrangements are identical, and explanation thereof in detail will be omitted here.

The switch 5 is actuated by the operator through the manual switch 30 to selectively establish electrical communications between the transducer 2 and the preamplifier 3 and between the transducer 2 and the drive circuit 4.

In operation, when it is required to collect sound waves, the operator turns off the manual switch 30 to connect the transducer 2 and the preamplifier 3. When it is required to vibrate the transducer 2, the operator turns on the manual switch 30 to input the ON-signals to the switch 5 and the drive circuit 4. The switch 5 then blocks the electrical communication between the transducer 2 and the preamplifier 3 to stop the sound-collecting operation, while it establishes the electrical communication between the transducer 2 and the drive circuit 4 to vibrate the transducer 2 for shaking foreign substances from the transducer 2.

Fig. 3 shows the third embodiment of the invention which is different from the second embodiment in Fig. 2 in that a controller 6 is provided instead of the manual switch 30. Other arrangements are identical, and explanation thereof in detail will be omitted here.

The controller 6 is designed to output the ON-signals to the drive circuit 4 and the switch 5 automatically upon turning on of the device or in response to input of a control signal from an external device to block the electrical communication between the transducer 2 and the preamplifier 3 while establishing the electrical communication between the transducer 2 and the drive circuit 4 to vibrate the transducer 2.

A temperature sensor 50 may be provided which measures the ambient temperature and outputs a signal indicative thereof to the controller 6. The controller 6 is responsive to the signal from the temperature sensor 50 to output the ON-signals to the drive circuit 4 and the switch 5 selectively. Usually, in cold conditions, the

moisture in the air is frozen solid on the transducer 2, which will affect on the operation of the transducer 2. Therefore, when the device is in a cold condition, that is, when the ambient temperature measured by the temperature sensor 50 is less than a given low temperature level, the controller 6 outputs the ON-signals for 2ms. at intervals of 1sec. to vibrate the transducer 2. When the device is used at a room temperature, it is required only to remove dust from the transducer 2. Thus, when the ambient temperature measured by the temperature sensor 50 is higher than a given normal temperature level, the controller 6 outputs the ON-signals for 2ms. at intervals of one hour to vibrate the transducer 2.

Fig. 4(b) shows an ON-duration for which the controller 6 outputs the ON-signals to the drive circuit 4 and the switch 5. Fig. 4(a) shows acoustic signals inputted from the transducer 2 to the controller 6 through the preamplifier 3. The controller 6 compares the acoustic signals inputted thereto with a preselected threshold level to remove noise components resulting from the vibration of the transducer 2 produced by the drive circuit 4.

The circuit structure shown in Fig. 3 may be used with the first embodiment shown in Fig. 1.

Fig. 5 shows a sound collecting device according to the fourth embodiment of the invention.

The sound collecting device includes generally a housing 10 and a sound collecting unit 11 installed in the housing 10. The sound collecting unit 11 consists of a horn 1 designed so as to increase in sectional area in a lengthwise direction for ease of collecting the

sound wave and an electroacoustic transducer 2 installed in a base of the horn 1. A preamplifier 3, like the above embodiments, connects electrically with the transducer 2.

The sound collecting device also includes an electromagnetic sensor 12, an amplifier 14, and a subtractor 15. The electromagnetic sensor 12 is made of a transducer and disposed in the housing 10 to catch electromagnetic waves (i.e., electric noises) inputted through an opening 13 and outputs a signal indicative thereof to the amplifier 14. The opening 13 is formed in the front surface of the housing 10 from which the horn 1 extends so that the electromagnetic sensor 12 can catch the electromagnetic waves transmitted from the same direction as that in which the sound waves enter the transducer 2. The amplifier 14 amplifies the input from the electromagnetic sensor 12 and outputs it to the subtractor 15. The amplifiers 3 and 14 may be omitted when the strength of sound waves and electromagnetic waves inputted to the transducer 2 and the electromagnetic sensor 12 is relatively great.

In operation, the transducer 2, as shown in Fig. 6, receives both a sound wave *a* and an electromagnetic wave or noise *b*, while the electromagnetic sensor 12 receives only the electromagnetic noise *b*. The transducer 2 outputs a composite signal *c* that is a mixture of the sound wave *a* and the electromagnetic wave *b* to the subtractor 15 through the amplifier 3. The electromagnetic sensor 12 outputs a noise signal *d* corresponding to the electromagnetic noise *b* to the subtractor 15 through the amplifier 14. The subtractor 15 removes the noise signal *d* from the composite signal *c* to produce an acoustic

signal *e* corresponding to the sound wave *a*. Therefore, even when used under the influence of electromagnetic waves, the sound collecting device of this embodiment can provide sound signals without electromagnetic noises.

Fig. 7 shows a sound collecting device according to the fifth embodiment of the invention which is different from the fourth embodiment only in that rectifier/peak hold circuits 16 and 17 are arranged between the amplifiers 3 and 14 and the subtactor 15. Other arrangements are identical, and explanation thereof in detail will be omitted here.

The rectifier/peak hold circuit 16 rectifies the composite signal *c* inputted through the amplifier 3 and holds a peak value of the rectified signal at given time intervals to produce a peak hold signal *f*. Similarly, the rectifier/peak hold circuit 17 rectifies the noise signal *d* inputted through the amplifier 14 and holds a peak value of the rectified signal at given time intervals to produce a peak hold signal *g*. The subtractor 15 subtracts the peak hold signal *g* from the peak hold signal *f* to produce an acoustic signal *h* corresponding to the sound wave *a* from which spike noises, instantaneous noises, and high-frequency noises are removed.

In the fourth and fifth embodiments, the drive circuit 4, the switch 5, the manual switch 30, and/or the controller 6, as shown in Figs. 1 to 3, may be provided, like the first to third embodiments, to vibrate the transducer 2 for shaking foreign substances from the sensor 2. Additionally, a vibrating circuit equivalent to a combination of the drive circuit 4, the manual switch 30, and/or the

switch 5 may also be connected to the electromagnetic sensor 12 for shaking foreign substances from the sensor 12. In this case, the vibrating circuit may be controlled by the controller 6 in the same manner as discussed in the third embodiment.

While the present invention has been disclosed in terms of the preferred embodiments in order to facilitate better understanding thereof, it should be appreciated that the invention can be embodied in various ways without departing from the principle of the invention. Therefore, the invention should be understood to include all possible embodiments and modifications to the shown embodiments which can be embodied without departing from the principle of the invention as set forth in the appended claims.

What is claimed is:

1. A sound collecting device comprising:

a transducer responsive to input of a sound wave to vibrate, producing a corresponding acoustic signal;

an amplifier amplifying the acoustic signal from said transducer; and

a vibrating circuit connected to said transducer in parallel to said amplifier to vibrate said transducer.

2. A sound collecting device as set forth in claim 1, further comprising a switch which selectively establishes and blocks communications between said transducer and said amplifier and between said transducer and said vibrating circuit.

3. A sound collecting device as set forth in claim 1, further comprising a controller which controls an operation of said vibrating circuit.

4. A sound collecting device as set forth in claim 2, further comprising a controller which controls a switching operation of said switch.

5. A sound collecting device as set forth in claim 3, further comprising a temperature sensor which measures an ambient temperature, and wherein said controller controls said vibrating

circuit to vibrate said transducer at a shorter time interval when the ambient temperature measured by the temperature sensor is lower than a given value and at a longer time interval when the ambient temperature is higher than a given value.

6. A sound collecting device comprising:

a transducer responsive to input of a sound wave to vibrate, producing a corresponding acoustic signal;

an amplifier amplifying the acoustic signal from said transducer;

an electromagnetic sensor responsive to input of an electromagnetic wave to produce a corresponding electromagnetic signal; and

an output circuit subtracting the electromagnetic signal produced by said electromagnetic sensor from an output from said amplifier to produce an acoustic signal from which an electromagnetic wave-caused noise is removed.

7. A sound collecting device as set forth in claim 6, further comprising a housing, a sound collecting unit disposed within said housing, and a sensor amplifier amplifying the electromagnetic signal outputted from said electromagnetic sensor, and wherein said transducer is installed in said sound collecting unit, and said electromagnetic sensor is installed in said housing adjacent said sound collecting unit.

8. A sound collecting device as set forth in claim 7, further comprising an opening formed in said housing for allowing the electromagnetic wave to enter said electromagnetic sensor from the same direction as that in which the sound wave enters said transducer.

9. A sound collecting device as set forth in claim 7, further comprising a first and a second peak hold circuit, the first peak hold circuit holding a peak of the output from said amplifier to provide a corresponding signal to said output circuit, the second peak hold circuit holding a peak of an output from said sensor amplifier to provide a corresponding signal to said output circuit.

10. A sound collecting device as set forth in claim 7, further comprising a transducer vibrating circuit connected to said transducer in parallel to said amplifier to vibrate said transducer and a sensor vibrating circuit connected to said electromagnetic sensor in parallel to said sensor amplifier to vibrate said electromagnetic sensor.

11. A sound collecting device as set forth in claim 10, further comprising a first and a second switch, the first switch selectively establishing and blocking communications between said transducer and said amplifier and between said transducer and said transducer vibrating circuit, the second switch selectively establishing and blocking communications between said electromagnetic sensor and

said sensor amplifier and between said electromagnetic sensor and said sensor vibrating circuit.

12. A sound collecting device as set forth in claim 10, further comprising a controller which controls an operation of said transducer vibrating circuit.

13. A sound collecting device as set forth in claim 11, further comprising a controller which controls switching operations of said first and second switches.

ABSTRACT

A sound collecting device is provided which is designed to minimize adverse effects on an output caused by exposure of an electroacoustic transducer to the air. The device includes an electroacoustic transducer and a vibrating circuit. The transducer is exposed to the air and responsive to input of a sound wave to produce a corresponding acoustic signal. The vibrating circuit vibrates the transducer to shake foreign substances such as dust or drops of water from the transducer. In a modified form, an electromagnetic sensor is provided which measures an electromagnetic noise transmitted to the transducer and which removes the electromagnetic noise from an output of the transducer to produce a noiseless acoustic signal.

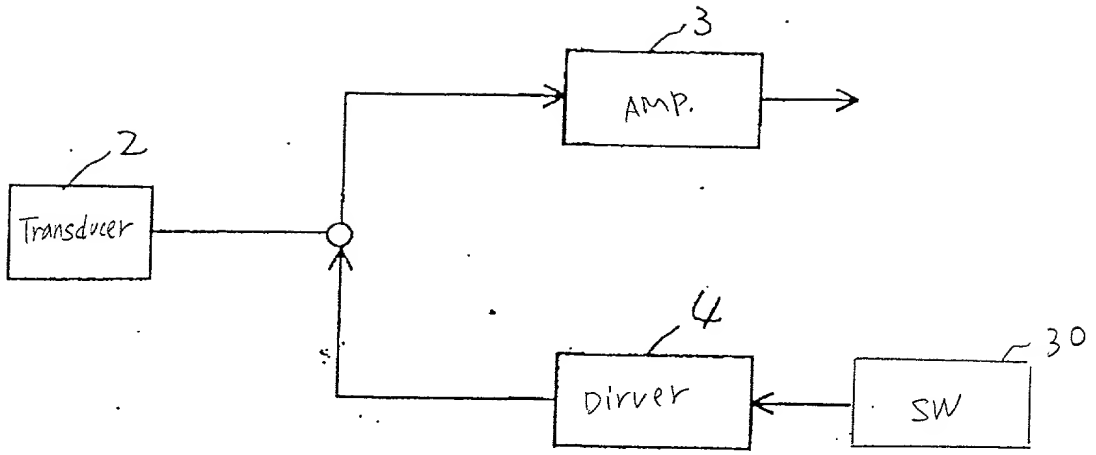

3
AMP.
2
Transducer
4
Dirver
30
SW

FIG. 1

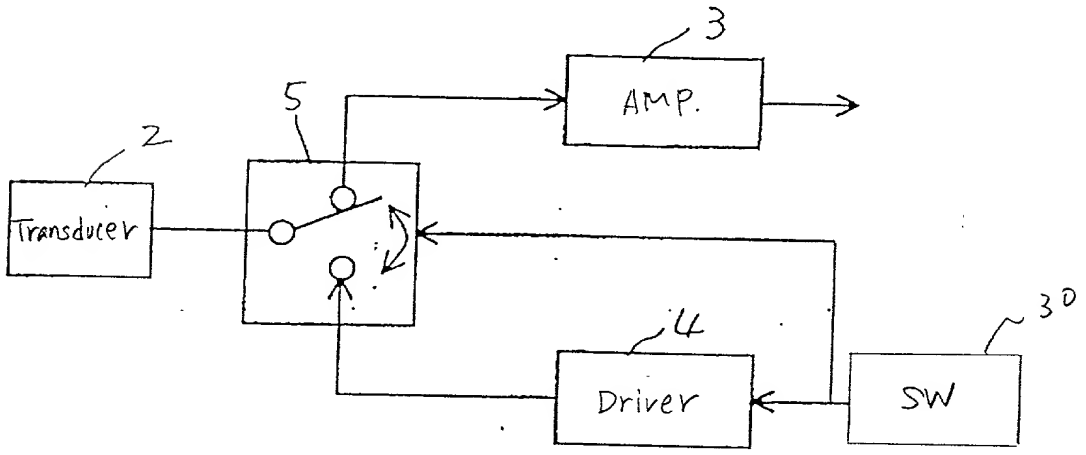

3
AMP.
5
2
Transducer
4
Driver
30
SW

FIG. 2

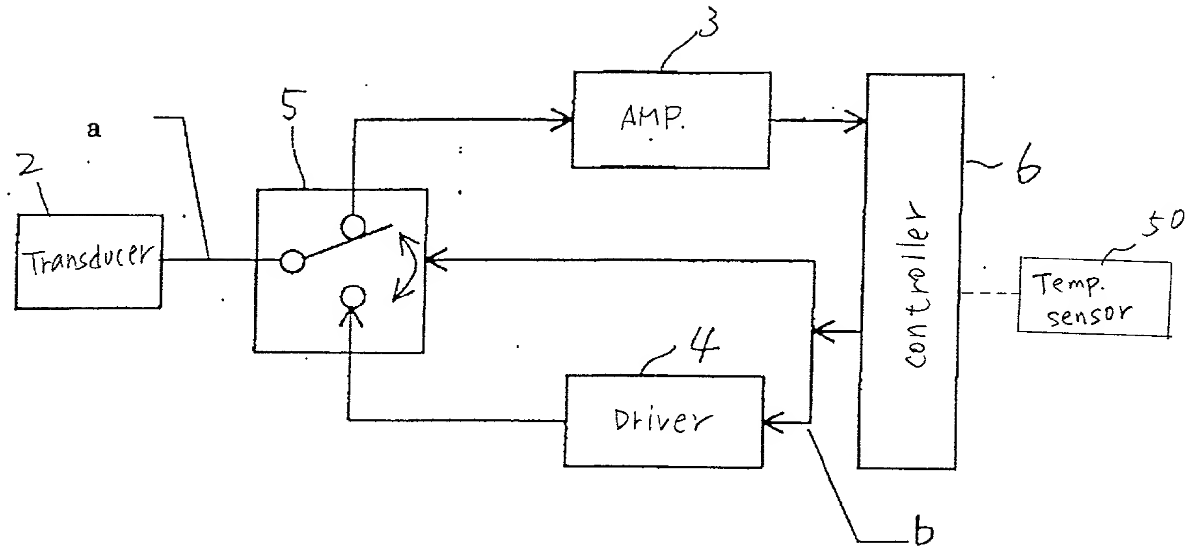


FIG. 3

FIG. 4(a)

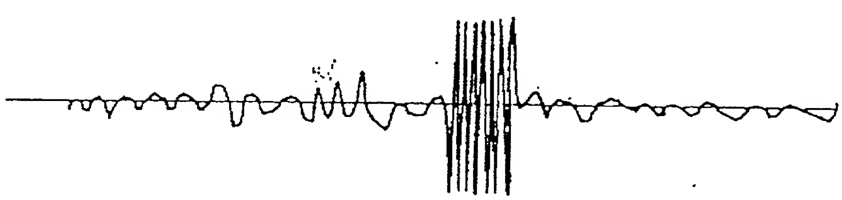
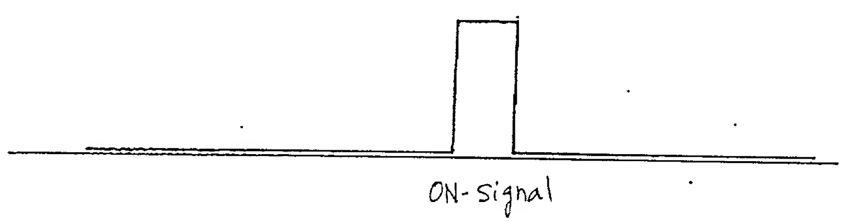


FIG. 4(b)



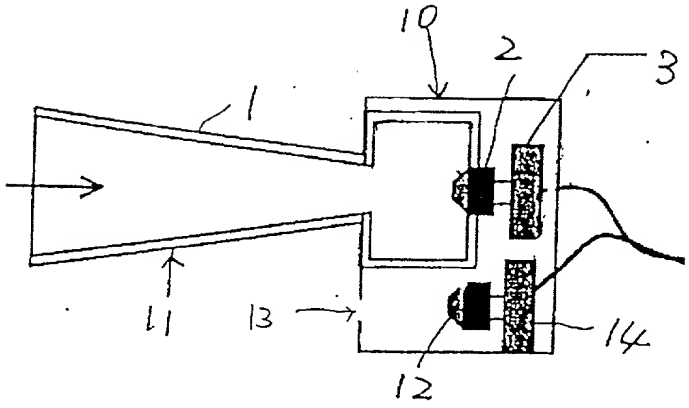


FIG. 5

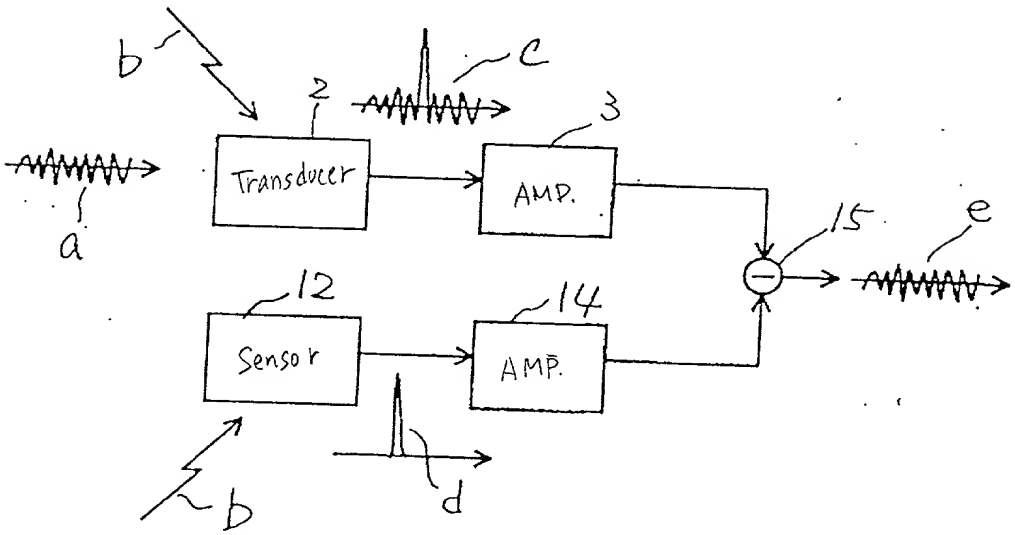


FIG. 6

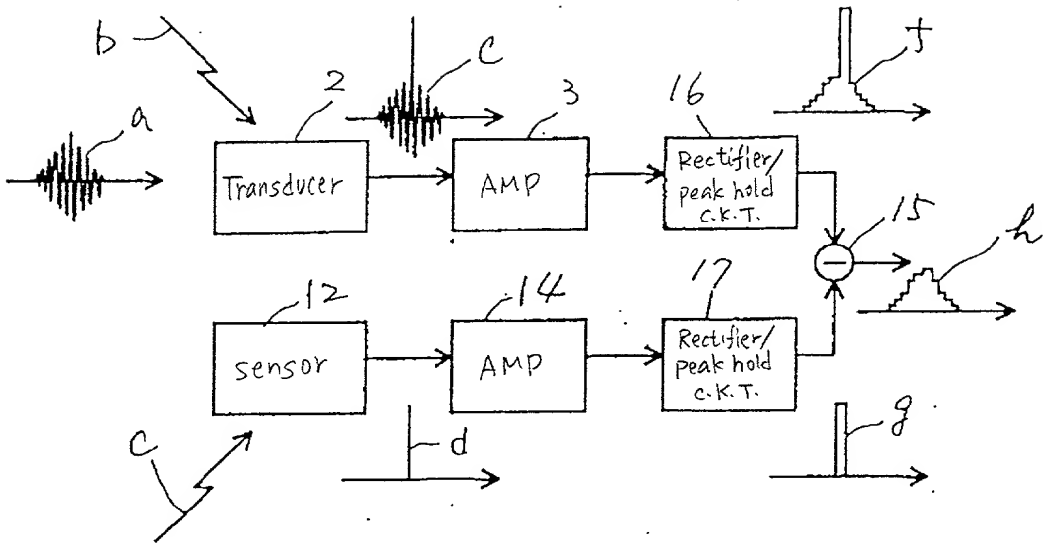


FIG. 7

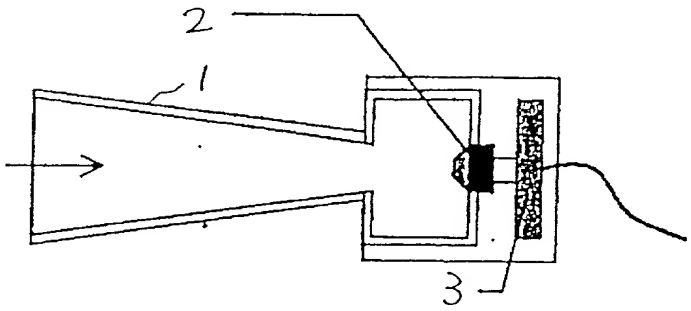


FIG. 8 PRIOR ART

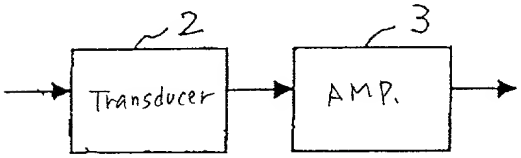


FIG. 9 PRIOR ART

P 20681-01
US-90032-YK

DECLARATION FOR PATENT APPLICATION

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SOUND COLLECTING DEVICE MINIMIZING ELECTRICAL NOISE

the specification of which: (check one)

[X] is attached hereto. [ ] was filed on _____19___, as United States Patent Application Serial No. or PCT International Application Number _____, and was amended on _____19___ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 CFR § 1.56(a).

Prior Foreign Application(s): I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate listed below, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

			Priority Claimed
10-282720 (Application No.)	Japan (Country)	October 5, 1998 (Day/Month/Year Filed)	[X] [ ] Yes No
(Application No.)	(Country)	(Day/Month/Year Filed)	[ ] [ ] Yes No
(Application No.)	(Country)	(Day/Month/Year Filed)	[ ] [ ] Yes No

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

Application No.	Filing Date

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by 35 U.S.C. § 112, first paragraph, I acknowledge the duty to disclose material information as defined in 37 CFR § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(U.S. Application Serial No.)	(U.S. Filing Date)	(Status--patented, pending, abandoned)
(U.S. Application Serial No.)	(U.S. Filing Date)	(Status--patented, pending, abandoned)

I hereby appoint Elliott I. Pollock, Registration No. 16,906; George Vande Sande, Registration No. 17,276; Burton A. Amernick, Registration No. 24,852; Stanley B. Green, Registration No. 24,351; Richard Wiener, Registration No. 18,741; Townsend M. Belser, Jr., Registration No. 22,956; Morris Liss, Registration No. 24,510; Martin Abramson, Registration No. 25,787; George R. Pettit, Registration No. 27,369; Elzbieta Chlopecka, Registration No. 32,767; Eric J. Franklin, Registration No. 37,134; Robert Scott Wales, Registration No. 39,413; and Jeffri A. Kaminski, Reg. No. 42,709, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Send Correspondence and Direct Telephone Calls to:
Morris Liss
(202) 331-7111

Morris Liss
Pollock, Vande Sande & Amernick, R.L.L.P.
P.O. Box 19088
Washington, D.C. 20036-3425 U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Hidetoshi Kinoshita

Inventor's Signature Hidetoshi Kinoshita Date September 30, 1999

Residence Address Yokohama, Japan

Citizenship Japanese

Post Office Address D-307, 1114, Kamisugeta-cho, Hodogaya-ku, Yokohama 240-0051 Japan

[ ] See next page for additional inventors